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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/526,173	03/15/2000	Isao Imamura	1714.0029	9971

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER	
TUGBANG, ANTHONY D	
ART UNIT	PAPER NUMBER
3729	

DATE MAILED: 04/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/526,173	IMAMURA, ISAO	
	Examiner	Art Unit	
	Dexter Tugbang	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) *7* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of the invention of Group I, Claims 1-6, in Paper No. 6 is acknowledged.

2. Claim 7 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

Specification

3. The abstract of the disclosure is objected to because of the use of implied language, i.e. "The present invention..." (first line of the Abstract). Correction is required. See MPEP § 608.01(b).

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the claimed terms of "first active energy setting material" (line 7 of Claim

1) and "ink-repellant second active energy setting material" (line 9 of Claim 1) is not recited in the specification.

6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: A Method of Manufacturing an Ink-Jet Recording Head.

Claim Objections

7. Claims 2-6 are objected to because of the following informalities: the preamble of dependent Claims 2-6 is inconsistent with the preamble of independent Claim 1. The examiner suggests amending each of Claims 2-6 to read as –The method of manufacturing the ink-jet recording head according to claim 1...--, to avoid such inconsistencies. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 1, it is unclear from the disclosure what is meant by the phrase of "removing said liquid path pattern" (line 16). The claimed "liquid path pattern" is referred to as the

photosensitive layer 8 in applicant's Figure 2. However, applicant's Figure 4 shows only a portion of the photosensitive layer 8 being removed, not all of layer 8 being removed. The limitations of "removing said liquid path pattern" implies that the entire liquid path pattern is being removed. This is contradictory, misleading, and confusing rendering the scope of the claims as being indefinite.

In Claim 2, the recitation of "an applying method...setting material" (lines 2-3) implies that there is an additional step of applying the ink-repellant second active energy setting material, separate from the step of "applying an ink-repellant...material" (lines 9-10 of Claim 1). How many times is the ink-repellant second active energy setting material being applied? Also, the phrase "said fine particles" (line 4) lacks positive antecedent basis.

In Claims 3 and 4, the same problems occur with the recitation of "an applying method...setting material" (lines 2-3 of each) as discussed with Claim 2 above.

In Claims 5 and 6, the phrase of "the cationic polymerization" (line 3 of each) lacks positive antecedent basis.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 2, 4 and 5, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Miyagawa et al 5,458,254.

Miyagawa discloses a method of manufacturing an ink jet recording head comprising: preparing a base plate 1 having ink ejection pressure generating elements 2 (in Fig. 1); forming a liquid path pattern 4 on the base plate with the use of a soluble resin (see col. 9, lines 50-55); applying a first active energy setting material (resin film 5) on the base plate and the liquid path pattern (see Fig. 3); applying an ink-repellent second energy active setting material (resist 6) on the first active energy setting material (see Fig. 4); exposing the first active and the ink-repellent second active energy setting materials (see Fig. 5); developing the first active and the ink-repellent second active energy setting materials with an aqueous solution (see col. 16, lines 41-46) to form an ejection port 7 above the ink ejection pressure generating elements 2 (see Fig. 6); and removing the liquid path pattern 4 in its entirety (see results of Figs. 6 and 7).

Regarding Claims 2 and 4, Miyagawa teaches that the ink-repellent second energy active setting material 6 is sprayed by fine particles of spin coating, which includes a drying process of either sputtering, vacuum deposition, or hardening through baking, to apply the ink-repellent second energy active setting material (see col. 11, lines 40-56) on the base plate.

Regarding Claim 5, Miyagawa further teaches that the first active energy setting material 5 can include the composition of an epoxy resin (see col. 10, line 51 to col. 11, line 12).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claim 3, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyagawa et al in view of Chambers et al 4,429,027.

Miyagawa discloses the claimed manufacturing method as relied upon above, further including that the ink-repellent second energy active setting material 6 is a photoresist mask made from a silicon oxide composition (see col. 16, lines 13-15). However, Miyagawa does not teach that the ink-repellent second energy active setting material is characterized by a flexographic printing method.

Chambers teaches a photoimaging process in which the photoresist or photomask is created directly on the surface to be processed, which simplifies the manufacturing process (see col. 1, line 60 to col. 2, line 5). This photoimaging process is considered to be a flexographic printing method by including the formation of the photoresist or photomask as a flexographic printing plate (see col. 6, lines 24-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the ink-repellent second energy active setting material of Miyagawa by utilizing it as a flexographic printing plate, as taught by Chambers, to achieve the same art recognized equivalents of exposing and developing the first active and the ink-repellent second active energy setting materials, which would simplify the overall manufacturing process saving production time and costs.

14. Claim 6, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyagawa in view of Yasui et al 4,536,468.

Miyagawa discloses the claimed manufacturing method as relied upon above, further including that the ink-repellent second energy active setting material 6 is a photoresist mask

made from a silicon oxide composition (see col. 16, lines 13-15). Miyagawa does not teach that the second energy active setting material is an epoxy resin cured by cationic polymerization.

Yasui suggests that photoresists can comprise compositions of either silicon resins or epoxy resins, which are cationic, polymerized compounds (see col. 5, lines 39-53) and provide the advantages of having a photoresist pattern of a very high resolution (see col. 1, lines 4-19).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the second energy active setting material of Miyagawa by forming the material with an epoxy resin, as taught by Yasui, to positively provide a photoresist of second energy active setting material with a high resolution of patterning.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dexter Tugbang whose telephone number is 703-308-7599. The examiner can normally be reached on Monday - Friday 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3590 for regular communications and 703-305-3588 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0858.

Dexter Tugbang
Examiner
Art Unit 3729

adt
April 20, 2002